

SECTION 16262

NON-AUTOMATIC TRANSFER SWITCH

PART 1 - GENERAL

1.1 APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1.1.1 Federal Standard (Fed. Std.):

FED-STD-595A Colors
(Notice 9)

1.1.2 Institute of Electrical and Electronics Engineers (IEEE) Standard:

472-74 Guide for Surge Withstand Capability (SWC)
(R 79) Tests

1.1.3 National Electrical Manufacturers Association (NEMA) Standards:

ICS 1-83 General Standards for Industrial Control and
(R 6-85) Systems

ICS 2-83 Standards for Industrial Control Devices,
(R 3-86) Controllers and Assemblies

ICS 4-83 Terminal Blocks for Industrial Control
Equipment and Systems

ICS 6-83 Enclosures for Industrial Controls and Systems
(R 3-86)

1.1.4 National Fire Protection Association (NFPA) Publication:

70-1987 National Electrical Code

1.1.5 Underwriters Laboratories, Inc. (UL) Publication:

1008-84 Automatic Transfer Switches
(R 3-86)

1.2 GENERAL REQUIREMENTS: Section "Electrical General Requirements" applies to this section with the additions and modifications specified herein.

1.3 SUBMITTALS FOR NON-AUTOMATIC TRANSFER SWITCH (NATS):

1.3.1 Shop Drawings: Include certified outline, electrical ratings, general arrangement, and detail drawings.

1.3.2 Certificates of Conformance: Submit proof of compliance with UL and NEMA standards as specified. Certificates are not required if manufacturer's published data submitted and approved reflect a UL listing and conformance with applicable publications of NEMA.

1.3.3 Certified Test Reports: Submit reports of tests required by UL 1008 and by the additional requirements listed below. The proof of listing by UL shall be submitted and will be acceptable evidence that the transfer switch conforms to UL requirements.

1.3.3.1 Withstand and Closing Tests Above UL-1008: The transfer switch shall be rated for use on a circuit having an available short circuit current of 65,000 amperes RMS symmetrical at 20 percent power factor for a duration of 3 cycles when coordinated with molded case circuit breakers, 10 cycles when coordinated with power circuit breakers, and 0.5 cycle when coordinated with current limiting fuses. The withstand and closing tests shall be conducted at full rated system voltage in accordance with UL-1008. The 3- and 10-cycle tests shall be conducted without contact damage.

1.3.3.2 Dielectric Withstand Test: The dielectric withstand test shall be repeated in accordance with UL-1008, after the withstand test specified in paragraph titled "Withstand and Closing Tests Above UL-1008".

1.3.3.3 Non-welding of Contacts: Transfer switch shall be rated for non-welding of contacts when used with the feeder overcurrent devices indicated on the drawings and with the available fault current specified herein.

1.3.4 Government Approval: Government approval is required for the non-automatic transfer switch.

1.3.5 Operating and Maintenance Manual: Submit for the transfer switch.

1.4 SERVICE CONDITIONS: Transfer switch shall be suitable for performance under the following service conditions:

1.4.1 Altitude: [5000] [_____] feet above mean sea level (minimum).

1.4.2 Relative Humidity: [_____] percent maximum, continuous.

1.4.3 Temperature: Minus [_____] degrees F. to [_____] degrees F.

1.4.4 Seismic Zone: [_____]

PART 2 - PRODUCTS:

2.1 TRANSFER SWITCH: Switch shall be UL listed for use in optional standby systems as described in NFPA 70 and shall conform to applicable requirements of UL 1008, NEMA ICS 1 and 2, and IEEE 472. Transfer switch shall be the doublethrow type, and be incapable of stops in intermediate positions during normal functioning. The transfer switch shall be electrically operated but mechanically held in both positions, with the operator momentarily receiving power from the source to which the load is to be transferred. Transfer switch constructed with either automatic or nonautomatic circuit breakers is unacceptable. Transfer switch equipped with protective devices to interrupt fault currents are also unacceptable. Transfer switch shall be rated for continuous duty at the continuous current rating specified. Switch shall be adequately rated for the application indicated, and shall have the following characteristics:

2.1.1.1 Voltage: 480 volts a.c.

2.1.1.2 Number of Phases: Three

2.1.1.3 Number of Wires: Three

2.1.1.4 Frequency: 60 Ks

2.1.1.5 Number of switched Poles: Three

2.1.1.6 Type of Load: Total system load shown

2.1.1.7 Continuous Current Rating: Equal to or exceed the rating shown.

2.1.1.8 Withstand and Closing Rating: Rated to withstand and close in on an available fault or short circuit current of 50,000 amperes, RMS symmetrical, at a power factor between 0.0 and approximately 0.20, for a duration of 10 cycles at a maximum voltage of 480 a.c.

2.1.1.9 Nonwelding of Contacts: Rated for nonwelding of contacts when used with the feeder overcurrent devices indicated and with the available fault current specified herein.

2.1.1.10 Main Contacts: Constructed of silver composition and protected by approved arcing contacts.

2.1.1.11 Accessories:

2.1.1.1.1 Operator: A manual momentary toggle switch or pushbutton for manual transfer to normal and standby.

2.1.1.1.2 Indicating Lights:

- a. A green indicating light shall supervise the normal power source and shall have a nameplate engraved "NORMAL".

- b. A red indicating light shall supervise the standby power source and shall have a nameplate engraved "STANDBY".

2.1.11.3 Auxiliary Contacts:

- a. One auxiliary contact closed when transfer switch is connected to normal source.
- b. One auxiliary contact closed when transfer switch is connected to standby source.

2.1.11.4 In-phase Monitor Controls: Provide in-phase monitoring control for transfer to standby source and for retransfer to normal source. The monitor shall disallow operation unless the phase angle between both sources is near zero.

2.3 ENCLOSURE: The switch and accessories shall be in a free- standing, floor-mounted, and ventilated NEMA ICS 6, Type 1, smooth sheet metal enclosure constructed in accordance with UL 1008. Intake vent shall be screened and filtered. Exhaust vents shall be screened. Metal shall be not less than US Standard Gauge No. 14. Doors shall have hinges, locking handle latch, and gaskets at jamb, sill, and head. The enclosure shall be equipped with one grounding lug for grounding the enclosure using No. 4 AWG copper conductors. The Contractor's field wiring terminating within the enclosure shall comply with NFPA 70. If wiring is not color coded, wires shall be permanently tagged near the terminal at each end with the wire number shown on approved shop drawings. Terminal blocks shall conform to NEMA ICS 4. Terminal facilities shall be arranged for entrance of external conductors from the bottom of the enclosure or associated transition section. Main switch terminals shall be of the pressure type and suitable for the termination of copper conductors shown.

2.3.1 Construction: The enclosure shall be constructed for convenient removal and replacement of contacts, coils, springs and control devices from the front without the removal of main power conductors or removal of major components.

2.3.2 Cleaning and Painting: Ferrous surfaces shall be cleaned and painted. Surfaces to be painted shall be free of all oil, grease, welding slag and spatter, mill scale, deleterious corrosion, dirt, and other foreign substances. Painting shall include at least one coat of rust-inhibiting primer and one coat of finish enamel. The rust- inhibiting primer shall be applied to a clean, dry surface as soon as practicable after cleaning. Painting shall be manufacturer's standard material and process, except the total dry film thickness shall be not less than 2.05 mils. Color of the finish coat may be the manufacturer's standard color, if approved, or No. 26314 Gray as specified in Fed. Std. 595. The finish shall be free from runs, sags, peeling or other defects.

PART 3 - EXECUTION

3.1 INSTALLATION: Installation shall conform to the requirements of NFPA 70 and manufacturer's recommendations.

3.2 FIELD TESTS AND INSPECTIONS: The Contractor shall furnish labor, equipment, and incidentals for, and shall perform all field tests. The Contractor shall give the Contracting Officer 7 calendar days notice of the times scheduled for tests so that the Contracting Officer may be present. Work affected by deficiencies shall be completely retested at the Contractor's expense. The manufacturer's factory representative shall assist the Contractor with the field test and inspection. Field tests shall include the following:

3.2.1 Demonstrate complete transfer switch operation. Contractor shall show by demonstration in service that all components of the transfer switch are in good operating condition, and function properly not less than five times.

-- END OF SECTION --